

ThreeBond

High Performance Sealant for Display Manufacturing Processes

Main (Edge) Sealant, End Cap Sealant,
Pin Attaching Sealant, Moisture Barrier Sealant,
Anisotropic Conductive Film (ACF),
Anisotropic Conductive Adhesive (ACA).

3025 B.



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EXHIBIT

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Main(Edge) Seal for LCD

UV Curable Epoxy Resin
ThreeBond 30Y-184G, 184H

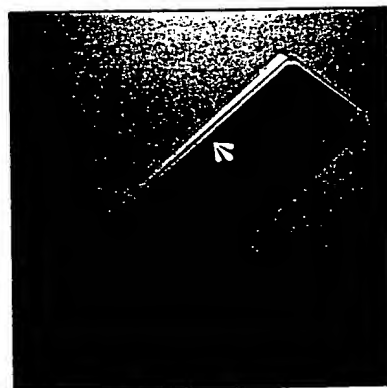
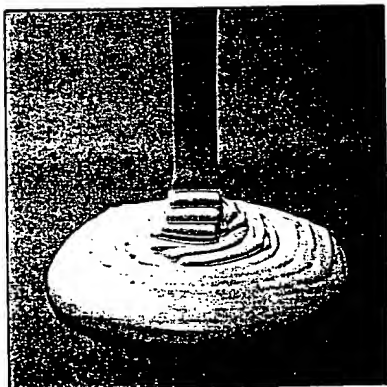
30Y-184 series has been developed for Main(Edge)Sealing application. After applying sealant by dispensing or screen printing, assemble two pieces of glass. Cures in 30-40 sec.

These keep high accuracy gap of the cell. Also these sealants contribute to advanced fine-pitch panel manufacturing process.

■ Main Feature

- ① Single Component UV Cure System On line assembly possible because of shorter cure time than thermal curing epoxy.
- ② Excellent Dimensional Stability.
- ③ Excellent Bonding Strength.
- ④ High Purity.
- ⑤ Low Moisture Permeability. Main Sealant must be made of substances that restrict permeation of moisture as much as possible.
- ⑥ Non Solvent Based System.

■ Container Size:250g Plastic Bottle



End Cap Seal for LCD

UV Curable Resin
ThreeBond 3051, 3052, 3026

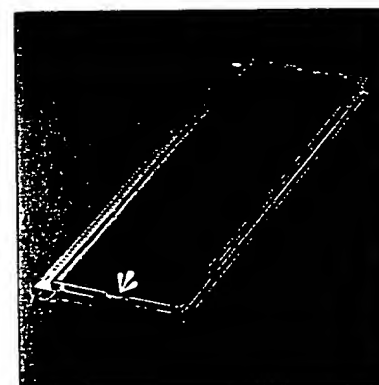
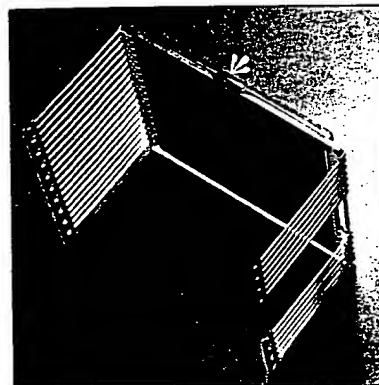
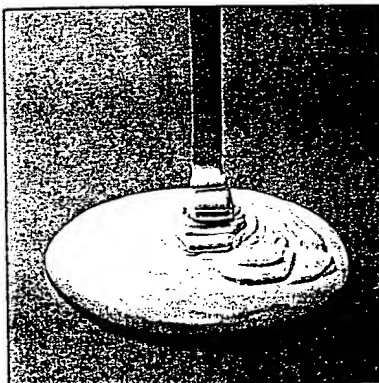
These products have been developed for End Cap Sealing application.

Used for end cap sealing after filling liquid crystal into the cell. Does not contaminate liquid crystal even at uncured stage.

■ Main Feature

- ① Single Component, UV Cure System.
- ② No Contamination with LC.
- ③ Excellent Dimensional Stability.
- ④ Low Moisture Permeability.

■ Container Size:250g Plastic Bottle



Seal for LCD

UV Curable Resin
ThreeBond 3050B, 3055B

These products have been developed for Pin Attaching Sealant application. Specifically for attaching pin lead and glass. After curing, it has excellent environmental resistances characteristics.

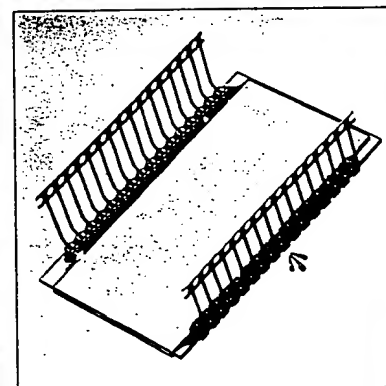
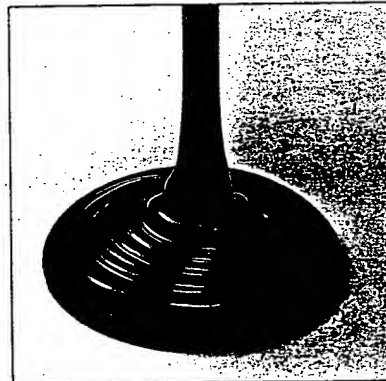
■ Main Feature

- ① Colored Formulation.

Colored sealant is required for easy confirmation to inspect on the glass.

- ② Quick Curable UV System.
- ③ Excellent Low Temperature Characteristics.
- ④ Excellent Bonding Strength at High Temperature.
- ⑤ High Purity.

■ Container Size:1kg Plastic Bottle



Moisture Barrier Seal

UV Curable Resin ThreeBond 3027B

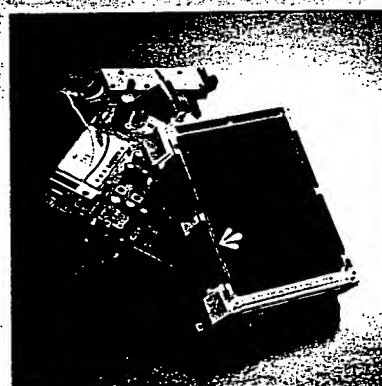
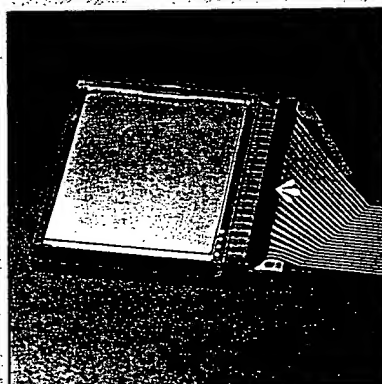
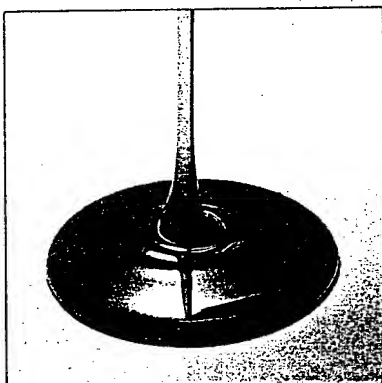
These products have been developed for Moisture Barrier Sealing application.

Used for over-coating on interconnecting area between FPC and ITO electrodes. Contributes to high reliability of panels.

■ Main Feature

- ① High Purity.
- ② Excellent Barrier Characteristics.
- ③ High Repairability.

■ Container Size: 250g, 1kg Plastic Bottle



Anisotropic Conductive Film

Thermoset Type Film & Thermoplastic Type Paste ThreeBond 3370K, 3370G

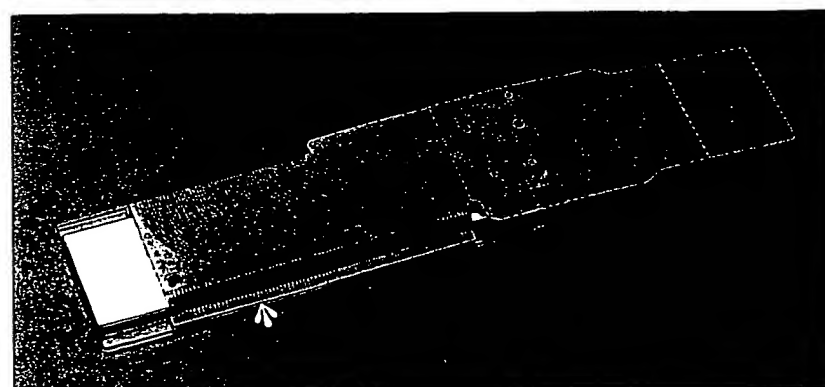
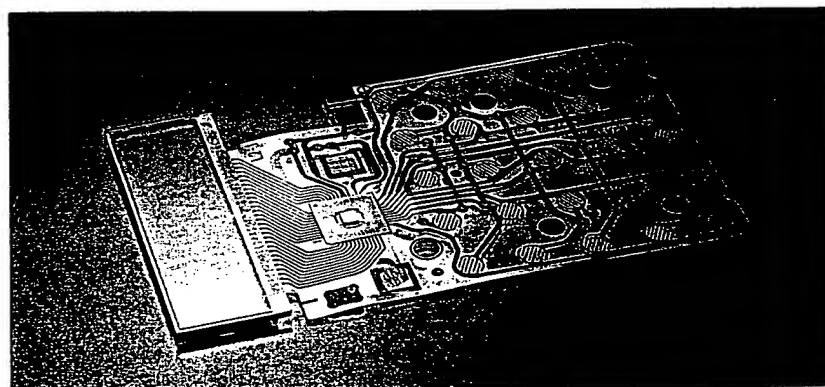
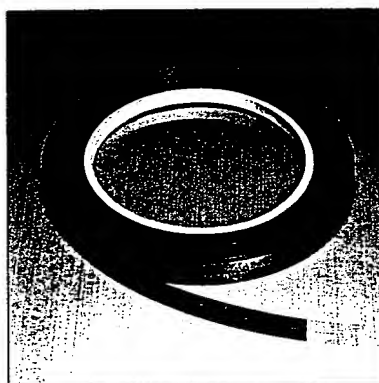
TB3370K has been developed for interconnecting FPC and ITO.

This is an anisotropic conductive thin film. Easy to connect by heat-press.

■ Main Feature

- ① Connect all electrode at once.
- ② Possible to connect 0.1mm pitch.
- ③ Able to connect on areas impossible for soldering.

■ Package Size: 2,3mm x 50M



TB3370G is screen-printable liquid anisotropically conductive paste.

Can apply adhesive layer on fine-pitched circuit board.

■ Main Feature

- ① Connect all electrode at once
- ② Screen printing method widens the application range in term of the electrode size and thickness.

■ Container Size: 200, 500g Plastic Bottle



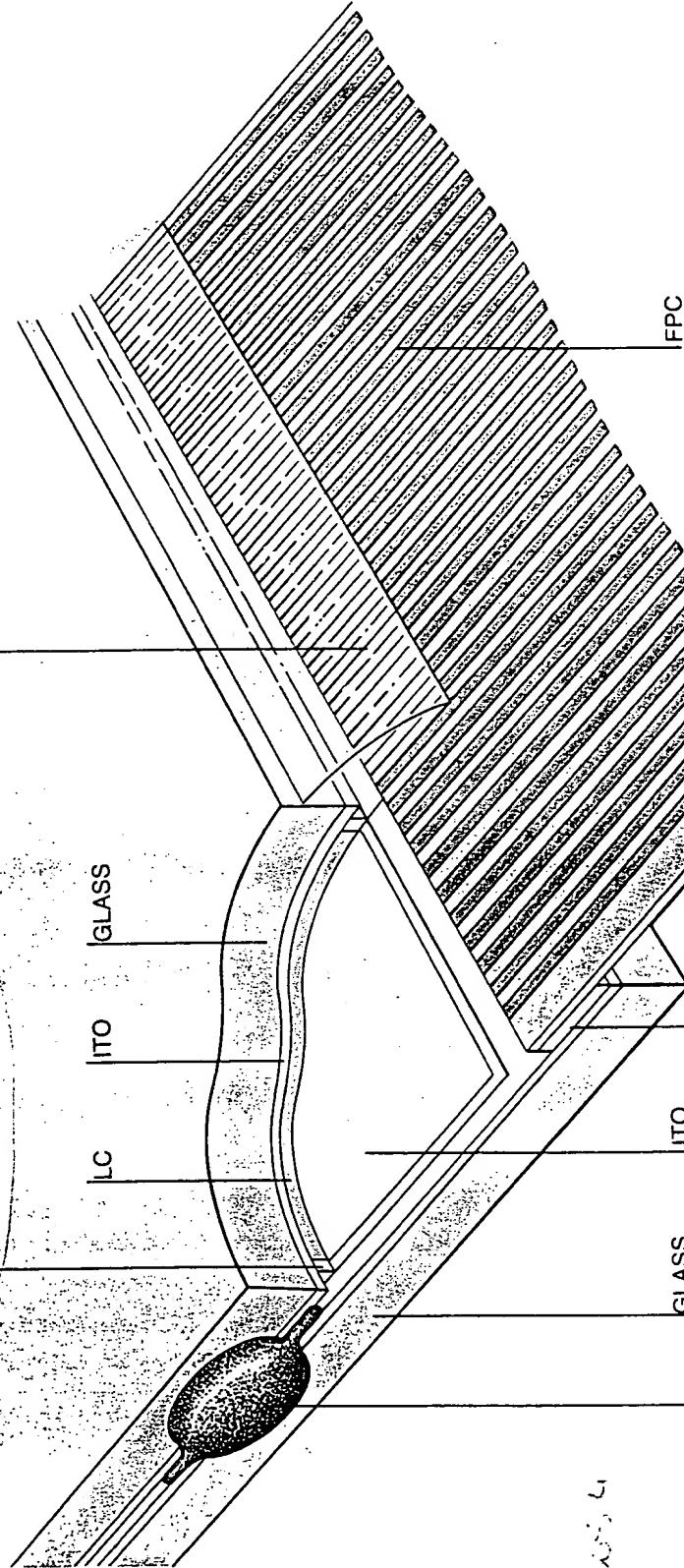
ThreeBond's LCD Applications

Moisture Barrier Sealant

UV Curable Resin
ThreeBond 3027B

Main(Edge) Seal for LCD

UV Curable Epoxy Resin
ThreeBond 30Y-184G, 184H



Anisotropic Conductive Film

Thermoset Type Film & Thermoplastic Type Paste
ThreeBond 3370K, 3370G

End Cap Seal for LCD

UV Curable Resin
ThreeBond 3051, 3052, 3026

Most important

Comparison manufacturing process between UV curable sealant, ThreeBond 30Y-184 series and thermoset type epoxy resin at Main Seal of LCD.

Conventional one component epoxy needs drying time for solvent volatilization, then another 2-3 hours are needed for full cure. Therefore glass substrate has stress, it is relatively poor for throughput and reliability.

On the other hand ThreeBond's UV Curable Main Sealant can be cured within a minute, making manufacturing time shorter.

The type of after cure necessary requires 1 hour at 90°C, so influence to glass substrate should be minimized to retain the stress.

Therefore cell manufacturing process cannot be done without UV curable main sealant.

UV Curable Sealant ThreeBond 30Y-184 Series	UV + IR Curable Sealant ThreeBond 3025B	Thermoset Type Epoxy One Component, Solvent Type
Screen Print or Dispense	Screen Print or Dispense	Screen Print or Dispense
Leveling	Leveling	Leveling 80~90°C x 1 HR Pre-heat/Solvent Emission
UV PRESS 3,000mj/cm ²	UV PRESS 1,500mj/cm ²	HOT PRESS 160°C x 1 HR
	AFTER CURE 90°C x 1 HR	AFTER CURE 160°C x 1~2 HR
CELL	CELL	CELL

Three Bond Co., Ltd.

World Headquarters

1456 Hazama-cho, Hachioji-shi, Tokyo 193, Japan

Phone:81-426-61-1336

Fax:81-426-69-7233

Distributed by:

THREE BOND GLOBAL NETWORK

THREE BOND CO., LTD.

1456 Hazama-cho, Hachioji-shi, Tokyo 193 Japan
Tel. 81-426-61-6560
Fax. 81-426-67-6594

THREE BOND INTERNATIONAL, INC.

101 East 52nd Street, 28th Floor, New York,
NY 10022 USA
Tel. 1-212-750-0611
Fax. 1-212-750-0612

THREE BOND OF AMERICA, INC.

20815 Higgins Court, Torrance,
CA 90501-1830 USA
Tel. 1-310-320-3342
Fax. 1-310-618-9507

THREE BOND USA, INC.

6184 Schumacher Park Drive, West Chester,
OH 45069 USA
Tel. 1-513-779-7300
Fax. 1-513-779-7375

THREE BOND USA, INC. DETROIT BRANCH

300 Galleria Officentre, Suite 316, Southfield,
MI 48034 USA
Tel. 1-810-353-2225
Fax. 1-810-353-2633

THREE BOND USA, INC. ATLANTA BRANCH

2 Ravinia Drive, Suite 1760, Atlanta,
GA 30328 USA
Tel. 1-770-395-5380
Fax. 1-770-395-5381

THREE BOND RESEARCH CENTER (USA), INC.

6184 Schumacher Park Drive, West Chester,
OH 45069 USA
Tel. 1-513-779-7300
Fax. 1-513-779-3160

THREE BOND CO., LTD. MEXICO LIAISON OFFICE

Norte 1-D No. 4632, Col. Defensores De La Republica
CP 07780 Mexico D.F. Mexico
Tel/Fax. 52-5-567-4792

THREE BOND DO BRASIL INDÚSTRIA E COMÉRCIO LTDA.

Av Prestes Máia, 315, Vila Marina, Diadema,
São Paulo, Brazil
Tel. 55-11-713-4011
Fax. 55-11-713-1308

THREE BOND EUROPE S.A.

Avenue des Béthunes, Parc d'Activité des Béthunes,
95310 Saint Ouen l'Aumône, France
Tel. 33-1-34-32-39-60
Fax. 33-1-34-32-39-61

THREE BOND CO., LTD. UK DIVISION

12 Erica Road, Stacey Bushes, Milton Keynes
MK 12 6HS UK
Tel. 44-1908-320325
Fax. 44-1908-320326

THREE BOND CO., LTD.

DUSSELDORF REPRESENTATIVE OFFICE

Alexanderstrasse 31, 40210 Düsseldorf, Germany
Tel. 49-211-322558
Fax. 49-211-323309

THREE BOND CO., LTD. MILAN LIAISON OFFICE

Via Senato 7, 20121 Milano, Italy
Tel. 39-2-7602-4222
Fax. 39-2-7602-4333

THREE BOND SINGAPORE PTE., LTD.

No.5, Joo Koon Crescent, Singapore 629009
Tel. 65-264-0022
Fax. 65-863-2324

THREE BOND SINGAPORE PTE., LTD.

THAI REPRESENTATIVE OFFICE

40 Sukhumvit Soi 42 Road, Bangkok, Thailand
Tel. 66-2-381-2432
Fax. 66-2-381-1690

THREE BOND SINGAPORE PTE., LTD.

AUSTRALIA BRANCH

8 Jarrah Drive, Braeside 3195, Victoria, Australia
Tel. 61-3-9587-4911
Fax. 61-3-9587-4922

THREE BOND SINGAPORE PTE., LTD.

KUALA LUMPUR REPRESENTATIVE OFFICE

15-G, The Highway Centre, Jalan 51/205,
46050 Petaling Jaya, Selangor, Malaysia
Tel. 60-3-794-9219
Fax. 60-3-794-9221

THREE BOND SINGAPORE PTE., LTD.

JAKARTA REPRESENTATIVE OFFICE

Jl. Indokarya Timur G15, Sunter-Podomoro,
Jakarta 14350 Indonesia
Tel. 62-21-6514701
Fax. 62-21-6514702

THREE BOND HONG KONG CO., LTD.

Suite 2308-9, 23th Floor, Tower 1, The Gateway,
25 Canton Road, TST Kowloon, Hong Kong
Tel. 852-2836-3068
Fax. 852-2893-1727

THREE BOND HONG KONG CO., LTD.

SHANGHAI LIAISON OFFICE

Room F, 16th Floor, Huadu, Mansion, 828-838,
Zhang Yang Road, Pu Dong, Shanghai, China
Tel. 86-21-582-07810
Fax. 86-21-582-00382

THREE BOND CO., LTD. SEOUL LIAISON OFFICE

Victoria B/D 709, 705-1 Yoksam-dong,
Kangnam-gu, Seoul, South Korea
Tel. 82-2-527-3263
Fax. 82-2-527-3262

THREE BOND CO., LTD. BEIJING LIAISON OFFICE

Room 413, Hotel New Otani, Chang Fu Gong 26,
Jian Guo Men Wai Street, Beijing 100022 China
Tel. 86-10-651-25555 Ext. 413
Fax. 86-10-651-59088

G.Mgr. Mr. Yamabe

Andy Bain

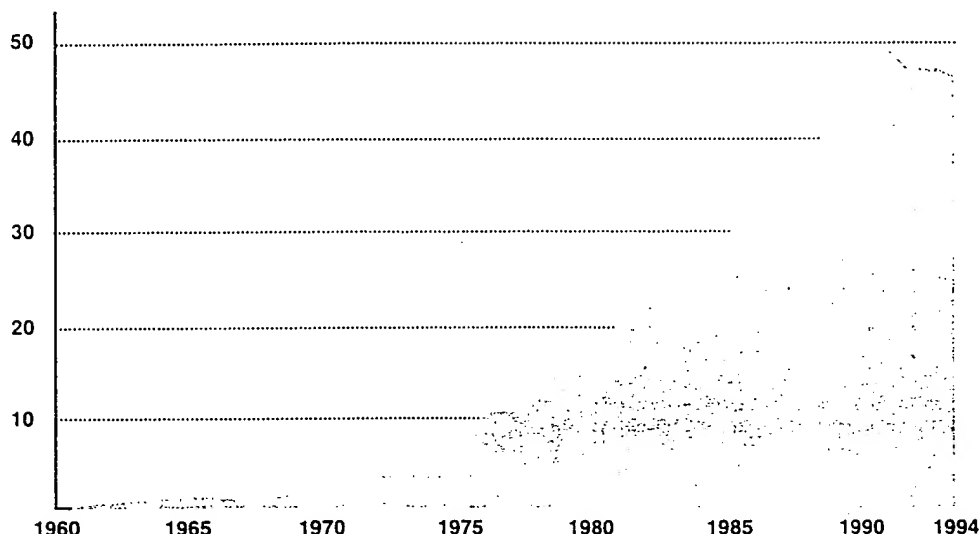
0191 516 0840 FAX/TEL.
Car 0831 322 362.

HEADQUARTERS ADDRESS: 1456 Hazama-cho, Hachioji-shi, Tokyo Japan
 INCORPORATION DATE: May 1955
 CHAIRMAN: Osamu Ukumori
 PRESIDENT: Satoru Kaneko

ASSOCIATES: 1,300 (250 outside Japan)
 SALES OFFICES: 135 (15 outside Japan)
 MANUFACTURING PLANTS: 16 (6 outside Japan)

GROUP NET SALES:

¥ billion



HISTORY (MAJOR BUSINESS DEVELOPMENTS):

1955	Company founding	1992	Three Bond Research Center (Cincinnati)
	Three Bond No. 1 Liquid Gasket		Atlanta Branch Office
1960	Solvent type Screw Locking Agent	1993	Seoul Liaison Office
1965	Anaerobic adhesive	1994	Mexico Liaison Office
1969	Cyanoacrylate adhesive		Three Bond Hong Kong
1973	Three Bond of America		UV Silicone
1974	Three Bond Do Brasil		UK Division ISO 9002
1975	Pre-applied adhesive for fasteners	1995	Kuala Lumpur Representative Office
1976	Three Bond Europe		Three Bond Co., Ltd. ISO 9001
1983	UV adhesive		Three Bond Europe ISO 9002
	Research Center (Tokyo)	1996	Beijing Liaison Office
1985	Australia Branch Office		Shanghai Liaison Office
1986	Anisotropic electroconductive adhesive		Jakarta Representative Office
	Three Bond USA		
	UK Division		
1987	Three Bond International		
	Three Bond Tec. (Singapore)		
1990	Thai Representative Office		
1991	Detroit Branch Office		
	Düsseldorf Representative Office		
	Milan Liaison Office		

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